THE POLYPLACOPHORA OF SOUTH AUSTRALIA.

By W. T. Bednall.

Read 13th November, 1896.

PLATE XII.

The late Mr. G. F. Angas contributed a paper to the Proceedings of the Zoological Society of London in January, 1865, on "The Marine Molluscan Fauna of South Australia," with a list of all the known species up to that time. The list included the following representatives of the Chitonidæ :—

Lophyrus muricatus, A. Ad.
Lophyrus tulipa, Quoy & Gaim.
Lepidopleurus longicymba, Quoy & Gaim.
Lepidopleurus variegatus, H. Ad. & Angas.
Lepidopleurus speciosus, H. Ad. & Angas.
Lepidopleurus liratus, H. Ad. & Angas [= *L. inquinatus* (Reeve)].
Chætopleura conspersa, H. Ad. & Angas.
Lorica Angasi, H. Ad. & Angas.
Plaxiphora ciliata, Sby.
Plaxiphora petholata, Sby.
Stenochiton juloides, H. Ad. & Angas.
Hanleya variabilis, H. Ad. & Angas.
Acanthochites scutiger, Ad. & Reeve.
Chitonellus Gunnii, Reeve.

A few years later I was able to add to this list, *Callistochiton antiquus*, Reeve, and *Lorica volvox*, Reeve (included in "A List of Species of Marine Mollusca found on the Coasts of the Province of South Australia," privately printed by me in 1875). A third species, formerly identified as *Chiton siculoides*, Carpenter, but now decided by Mr. Pilsbry to be new; and a fourth, referred to *Chiton concentricus*, Reeve, but which now proves to be Mr. Pilsbry's *Chiton Coxi*, are here added.

In 1893 Mr. D. J. Adcock published "A Hand List of the Aquatic Mollusca inhabiting South Australia," which contained all the above enumerated species, with the following additional ones: *Chiton Adelaidensis*, Reeve, *Chiton concentricus*, Reeve, *Acanthochites Zelandicus*, Quoy & Gaim., and *Cryptoplax Burrowi*, Smith.

The foregoing comprise all the species of Polyplacophora recognized up to within the last two years as living in our waters. As a group the Chitons have always greatly interested me, and it has been a long-cherished desire on my part to be able to satisfactorily identify the South Australian forms, especially those described by Adams and Angas. I was, however, able to make but little progress, partly owing to the fact that the literature at my command was limited, and partly because the shells had been overlooked in collecting. It was not

until the publication of Mr. Pilsbry's work on the Polyplacophora in the Manual of Conchology that the way was cleared for me. By a careful study of this work as a whole I was soon enabled to refer my specimens to their proper genera, and I further obtained a fair grasp of their specific value. Ascertaining, too, from the Manual, that some of our species were but little known in Europe and America, and others again quite unknown to Mr. Pilsbry, I submitted my material to him for inspection. Many of our shells were discovered to be quite new, and the number of South Australian Chitons is now considerably increased. The correspondence with Mr. Pilsbry has enabled me to compile the present list of species, and I may here tender my acknowledgment for the invaluable help he has rendered me. Moreover, without the co-operation of Mr. E. H. Matthews, of Yorke Peninsula, the work could not have been satisfactorily accomplished, for the bulk of the collecting has devolved upon him. To Professor Tate, Mr. D. J. Adcock, and Dr. J. C. Verco, I am also indebted for valuable aid.

The following is a detailed list of all the Chitons that are credited to the province of South Australia, the coast-line of which extends from Eucla in the west, to Cape Northumberland, near its eastern boundary, and includes Spencer and St. Vincent's Gulfs:—

Lepidopleurus inquinatus (Reeve).
Callochiton platessa (Gould).
Ischnochiton juloides, Ad. & Ang.
—— *Pilsbryanus*, Bednall.
—— *cariosus*, Pilsbry.
—— *Pilsbryi*, Bednall.
—— *ustulatus* (Reeve).
—— *crispus* (Reeve) [= *C. longicymba*, auct. *non* Blainv.].
—— *fruticosus* (Gould).
—— *contractus* (Reeve).
—— *variegatus* (Ad. & Ang.).
—— *decussatus* (Reeve).
—— *ptychius*, Pilsbry.
—— *Tatcanus*, Bednall.
—— *smaragdinus* (Angas).
—— *virgatus* (Reeve).
—— *Thomasi*, Bednall.
—— *Novæ-Hollandiæ* (Gray).
Callistochiton antiquus (Reeve).
Chiton tricostalis, Pilsbry.
Chiton calliozona, Pilsbry.
—— *jugosus*, Gould.
—— *Coxi*, Pilsbry [= *C. concentricus*, Bedn. *non* Reeve].
—— *exoptandus*, Bednall.
—— *Bednalli*, Pilsbry.
Lorica volvox (Reeve).
Loricella Angasi (Ad. & Ang.).
Plaxiphora petholata (Sby.).
—— *conspersa* (Ad. & Ang.).
—— *glauca* (Quoy & Gaim.) [= *P. ciliata*, Ang. *non* Sby.].
Acanthochites asbestoides (Smith).
—— *Bednalli*, Pilsbry.
—— *granostriatus*, Pilsbry.
—— *speciosus* (H. Ad.).
—— *Matthewsi*, Bednall & Pilsbry.
—— *variabilis* (Ad. & Ang.).
Cryptoplax striatus (Lamk.), var. *Gunnii*.

Species whose Occurrence is Doubtful.

Ischnochiton Adelaidensis (Reeve).
Chiton limans, Sykes [= *C. muricatus*, Ad. *non* Tilesius].
—— *tulipa*, Quoy & Gaim.
Acanthochites Zelandicus (Quoy & Gaim.).
—— *scutiger* (Ad. & Reeve).
—— *Burrowi* (Smith).

With the exception of the doubtful species, authentic specimens of all the foregoing have passed through my hands. It will be seen that when Mr. Adcock's list was published in 1893 only twenty-two species were credited to our waters, and amongst these all the doubtful ones. In the short space of less than three years I have been enabled to augment the list to thirty-seven known, and six doubtful species, in fact to all but double the number, which it must be admitted is good evidence of the richness of South Australia in Polyplacophora.

1. Lepidopleurus inquinatus (Reeve).

Chiton inquinatus, Reeve: Conch. Icon., sp. 154.
Lepidopleurus liratus, H. Adams & Angas: Proc. Zool. Soc. 1864, p. 192; Pilsbry, Man. Conch., ser. I, vol. xv, p. 101.

A small elongate species, ornamented dorsally with fine, longitudinal, microscopically-closely-beaded riblets, which become coarser and somewhat divergent on the side slopes; and with the terminal and lateral areas concentrically sulcate, the lateral areas especially so. The colour is not constant, varying from dirty yellow to dark brown. The South Australian examples which have been taken do not exhibit the brown spots on the summits of the valves that are present in New Zealand ones, and as shown in the figure given in the Conch. Icon. Length 10, breadth 3 mm.

Hab.—East and west sides of Southern Yorke Peninsula, South Australia; Port Phillip, Victoria; Tasmania; also New Zealand (Suter, Nautilus, ix, p. 108).

A small Chiton obtained amongst a great number of specimens collected in company with Mr. E. H. Matthews in March, 1895, was forwarded to Mr. Pilsbry, with another and larger unnamed example that had been obtained from Hobson's Bay, Victoria. An examination of the shell had shown me that it was a *Lepidopleurus*, but I was not prepared for the discovery, by comparison with the types, that it was conspecific with Reeve's *C. inquinatus*, since I had concluded that a colour variety of *Lepidopleurus* [*Ischnochiton*] *variegatus*, Ad. & Ang., would prove to be synonymous with that species.

2. Callochiton platessa (Gould).

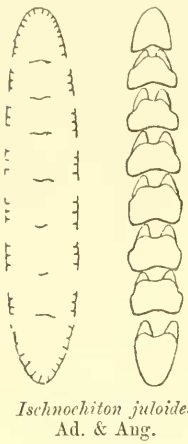
Chiton platessa, Gould: Proc. Boston Soc. Nat. Hist., vol. ii (1846), p. 143; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 49, pl. x, figs. 1–5.

A single specimen of this well-known New South Wales species was obtained at Port Willunga, St. Vincent's Gulf, by Mr. W. Kimber. The coloration of the South Australian specimen is ruddy brown, with cloudy patches of white on the margins of the valves, near the girdle; the umbones of the fifth, sixth, and seventh valves are bright orange-red, the same colour showing beneath the brown tint of the valves anterior to them, but not on the posterior valve: on this there are a few white spots.

3. Ischnochiton (Stenochiton) juloides, Ad. & Ang. Pl. XII, Fig. 1.

Stenochiton juloides, Adams & Angas: Proc. Zool. Soc. 1864, p. 193; *op. cit.* 1865, pl. ii, fig. 15; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 55, pl. xvi, figs. 6–8.

A very peculiar and easily recognized form of Chiton, but one that does not often fall into the hands of the collector. In addition to the original description by Adams and Angas, the amplified one of the type-specimen by Dr. Carpenter is given in the Manual of Conchology, so it is unnecessary to repeat them here. Four specimens have come into my hands, all of which, besides one or two others that I know of, were found living on *Pinna* shells, below low-water mark. The very young ones 5–7 mm. in length are not uncommon in shell sand, but the full-grown shell is by no means easily obtained. Length of largest specimen 46 mm., breadth 8 mm.

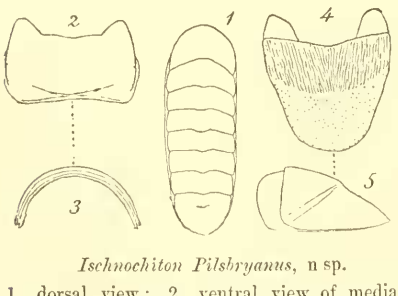


Ischnochiton juloides, Ad. & Ang.

Hab.—(Type) Holdfast Bay (Angas); Largs Bay (Adcock); Yorke Peninsula (Matthews).

4. Ischnochiton (Stenochiton) Pilsbryanus, n.sp.

Shell small, thin and delicate, narrow and elongated, evenly high-arched, and rounded dorsally. Surface glossy and smooth; under the lens seen to be closely dotted with white on the lateral areas and end valves, and with short longitudinal strokes on the central areas. Colour various: pale green, closely and indistinctly mottled with white, and with several brown dots along the posterior sutural margin of each valve, and marked with white, or sometimes pink, at each umbo, or of a dark chestnut shade blotched at each umbo with white. The girdle light, with dark bars. Anterior valve somewhat wider than long, the anterior slope straight or slightly convex. Intermediate valves over twice as wide as long; lateral areas well raised, but not with sharply defined anterior borders, and narrowly wedge-shaped, not extending to the outer-anterior angle of tegmentum.



Ischnochiton Pilsbryanus, n sp.

1, dorsal view; 2, ventral view of median valve; 3, anterior view of same; 4, dorsal view of posterior valve; 5, lateral view of same.

Posterior valve slightly longer than wide, the central mucro but slightly projecting, posterior slope slightly convex. Interior white, or showing the brown in dark specimens. Sutural laminæ very small, and separated by a wide straight sinus. Insertion plates very short, little longer than the eaves. Anterior valve with 13, intermediate valves 2–2, posterior valve 14 slits. Girdle very narrow, clothed with smooth scales. Length 5·75, breadth 2 mm.

Hab.—Troubridge Shoal, St. Vincent's Gulf, on seaweed (? *Zostera*).

This minute species resembles *Ischnochiton juloides* in general features, but has much shorter valves. The megalæsthetes are conspicuous under the microscope, appearing as somewhat regularly arranged white dots on the lateral areas, head valve, and posterior portion of tail valve, and as short white longitudinal lines on the central areas.

5. Ischnochiton (Heterozona) cariosus (Pilsbry).

Heterozona cariosa (Carpenter MS.), Pilsbry: Man. Conch., ser. I, vol. xiv, p. 65, pl. xxiv, figs. 20–2.

An oblong shell, with rounded valves, of a dirty yellowish hue, sometimes spotted with brown. Finely reticulated on the summits of the valves, becoming coarsely divaricately striate on the side slopes. Lateral areas with several riblets, which are broken up into coarse uneven granules, and occasionally bifurcate. Anterior valve closely radiate; posterior valve concentrically pustulose. Girdle in the vicinity of the valves crowded with large flattened projecting scales, unequal in size, the marginal ones being very much smaller. The carious state of the valves of very many of the specimens of this species is a noticeable feature, hence the specific name. Length 52, breadth 19 mm.

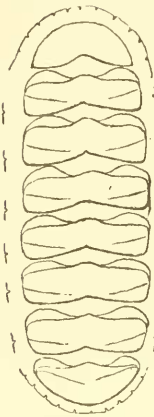
Hab.—Encounter Bay; and many stations in both St. Vincent's and Spencer Gulfs; also Port Fairy, Victoria, where the species attains a large size.

"Australia" is the country recorded for the species. Although plentiful under blocks of limestone at several places in St. Vincent's Gulf, it is not mentioned in Mr. Angas' List of South Australian Shells; nor does it appear to have been located by any collector prior to this.

6. Ischnochiton Pilsbryi, n.sp. Pl. XII, Fig. 2.

Shell oblong, elongated, with broadly arched rounded valves, not carinated. Colour, uniform ochraceous yellow. Anterior valve with about thirty-six closely-set, radiating, finely pustulose riblets, not extending to the apex, shorter riblets occurring occasionally between the others at the outer margin, the area around the apex granulose. Intermediate valves coarsely unevenly granulated on the dorsal area, the granules gradually transformed into coarse, uneven, slightly convergent and then divergent corrugations on the side slopes, the interspaces of the corrugations increasing in width towards the outer edges; lateral areas distinctly raised, narrow, and ornamented

with from three to five pustulose ribs, the outer ones being the more prominent, small granules studding the spaces between the ribs. Sutural plates rounded; sinus wide, somewhat inclined to convexity. Interior white. Posterior valve very indistinctly radiated, but irregularly concentrically granulated towards the margin and everywhere studded with smaller granules. Umbo antero-central, the slope behind it scarcely concave. The anterior valve has 11, the median 1, and the posterior 11 slits. Girdle densely covered with very small flattened, imbricating, striated scales, becoming smaller towards the outer edge. Length 38, breadth 12 mm.



Ischnochiton Pilsbryi, n.sp.

Hab.—Sultana Bay, Yorke Peninsula, at which locality only a few specimens have been obtained.

In reference to this shell Mr. Pilsbry writes that it is allied to *I. cariosus* in the sculpture of the central areas, but has the girdle of the typical Ischnochitons.

7. Ischnochiton ustulatus (Reeve).

Chiton ustulatus, Reeve: Conch. Icon., sp. 102; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 96, pl. xxiv, figs. 100, 1–4, 11, 12.

An elongate oval shell of a scorched brown hue, except upon the dorsal ridge of all the valves except the anterior one. On the summit of the last seven valves the dominant colour gives place to creamy white with longitudinal splashes of burnt brown. The surface of the valves is apparently smooth, but by the aid of a lens is seen to be minutely reticulated. The lateral areas are but slightly raised, and both they and the terminal valves are very indistinctly radiately and concentrically striated. The girdle is pale yellow, and the scales on it so minute as not to be discernible without the aid of the microscope. Interiorly the shell is tinged with purple, paling to bright pink at the junction of the valves, a characteristic that is constant and serves well as a means of identification. Old specimens are very much eroded on the dorsal ridge. Length 45, breadth 16 mm. Large specimen, l. 57 × 21 mm.

Hab.—Many stations in St. Vincent's Gulf, under blocks of limestone, at low-water mark. Fine specimens east and west sides of Southern Yorke Peninsula.

Not included in Mr. Angas' List of South Australian Mollusca, but recorded by him from New South Wales, where it does not appear to occur. I have received specimens of *I. divergens* under this name. The excessively small girdle-scales are diagnostic. In life this Chiton is a very conspicuous object, the deep dark-brown shell standing out in strong contrast to the brilliant orange-coloured girdle surrounding it.

8. Ischnochiton crispus (Reeve).

Chiton crispus, Reeve: Conch. Icon., sp. 120; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 89, pl. xxiv, figs. 98, 99.
Ischnochiton Haddoni, Pilsbry: Man. Conch., ser. I, vol. xiv, p. 88, pl. xxii, figs. 67–73.

This species, until its description by Mr. Pilsbry in the Manual of Conchology as *I. Haddoni*, was quoted by Mr. Angas in his List of South Australian Shells, and accepted by Australian conchologists, as *Lepidopleurus longicymba*, Blainville, and distributed by them as such. In shape it is elongately oval, and decidedly carinate on the dorsal ridge—*I. longicymba* being rounded—with finely decussated, striated central valves, concentrically granulate terminal valves, and longitudinally striated lateral areas: it attains to a length of about an inch. This species is extremely variable in coloration, and the remarks of Reeve with regard to *I. longicymba* are equally applicable to it. He says: "It would be vain to attempt to describe the variations which this species exhibits in colour and design of painting; in this respect it is of all Chitons the most variable, but the sculpture is uniform throughout." The most conspicuous form is black, with a broad white dorsal band.

Hab.—Encounter Bay, Rapid Bay, Port Willunga, Marino, Southern Yorke Peninsula, and many other localities in South Australia; Port Fairy, Victoria; New South Wales; Tasmania. It appears to occur generally along the southern coast of Australia from Port Jackson, in New South Wales, to Port Lincoln, in South Australia, including Tasmania, and to represent in Australia the New Zealand *I. longicymba*.

9. Ischnochiton fruticosus (Gould).

Chiton fruticosus, Gould: Proc. Boston Soc. Nat. Hist., ii, p. 142; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 91, pl. xxiii, figs. 78–80.

A specimen of this *Ischnochiton*, which is common in New South Wales, has very recently been obtained by Mr. E. H. Matthews on Southern Yorke Peninsula. It is of the normal size.

10. Ischnochiton contractus (Reeve).

Chiton contractus, Reeve: Conch. Icon., sp. 78; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 93, pl. xxiii, figs. 81, 82.
Chiton pallidus, Reeve: Conch. Icon., sp. 92; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 89, pl. xxiii, fig. 91.

The identification of this species has given me much trouble, because I could not satisfactorily assign it to either the description or figure of *C. contractus* in the Conch. Icon., while at the same time I seemed constrained to look upon *C. pallidus* as the representative of the shell. It is, however, accepted on the authority of Mr. Pilsbry, Nautilus, vol. viii, 1895, p. 129, where also it is stated that "Mr. Sykes considers *pallidus*, Rve., a synonym." Dr. Carpenter's notes on the British Museum specimens, as given by Pilsbry (Manual of

Conchology, vol. xiv, p. 89), fully describe this species, although I have not yet seen a South Australian specimen streaked with any other colour than olive. Length 42, breadth 18 mm.

Hab.—Encounter Bay; St. Vincent's Gulf (Rapid Bay, Willunga, Marino); Troubridge Shoal; east and west sides of Southern Yorke Peninsula, under stones, low-water mark; also Port Fairy, Victoria.

Not included in Angas' Molluscan Fauna of South Australia, Proc. Zool. Soc. 1865.

11. Ischnochiton variegatus (Ad. & Ang.).

Lepidopleurus variegatus, H. Adams & Angas: Proc. Zool. Soc. 1864, p. 192; Pilsbry, Man. Conch., ser. I, vol. xv, p. 102.

A small species attaining a length of two-thirds of an inch. It is oblong in form, and the coloration appears to be peculiar to it amongst the South Australian Chitons. Some are cream-coloured, with just a few dots of brown, especially along the dorsal ridge and the outer edge; others, again, are blotched with green and irregularly dotted with brown, and a large proportion are blackish-brown throughout, except for a pale longitudinal streak along the dorsal ridge, which is almost always maculated with the prevailing colour.

Not known to Mr. Pilsbry, who, however, on receipt of specimens from me, wrote that he had no doubt of the identification. The original description is, I think, sufficient to enable the student to recognize this species, if in his possession, but probably it is not to be found in many collections.

Hab.—Plentiful at Sultana Bay, Yorke Peninsula; also at Hardwicke Bay, Spencer Gulf.

12. Ischnochiton decussatus (Reeve).

Chiton decussatus, Reeve: Conch. Icon., sp. 107; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 93, as a synonym of *I. contractus*, Reeve.
Chiton castus, Reeve: Conch. Icon., sp. 145.
Lepidopleurus speciosus, H. Adams & Angas: Proc. Zool. Soc. 1864, p. 192.

Shell oval, full-grown specimens measuring nearly two inches in length by an inch in width. Colour greenish or yellowish white, painted on, and in the vicinity of, the summits of the valves with elongated triangular patches of brown, the apices pointing posteriorly. Some specimens dark brown throughout. The end valves and lateral areas are ornamented with concentric rows of closely-set but perfectly distinct granules, irregular in size; central valves carinate, finely decussately striate on the summit, thence to the outer margin divergently flexuously striated. Girdle brown, sometimes mottled with white, covered with small closely imbricating scales.

Hab.—Sultana Bay (fine specimens); Troubridge Shoal; Port Willunga, in St. Vincent's Gulf; also Port Lincoln (Angas), and Hardwicke Bay, in Spencer Gulf.

The distinct granular ornamentation of this species at once distinguishes it from any other South Australian Chiton. It is curious, therefore, that Mr. Angas, who collected it in this Colony, did not recognize its identity with the shells in the Cumingian Collection, described by Reeve as under the above name.

13. Ischnochiton ptychius, Pilsbry.

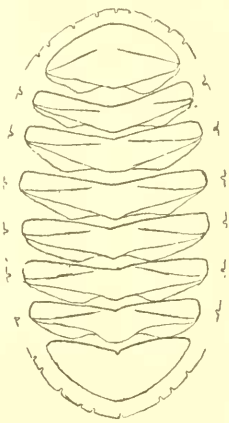
Ischnochiton ptychius, Pilsbry: Nautilus, vol. viii, p. 53.

It is a small oval pink-tinged shell, with wrinkled striations on the dorsal areas, and somewhat coarse concentric sulcations on the lateral areas, which are strongly serrated at the sutural margin. Length 11, breadth 8 mm.

Hab.—One specimen, St. Vincent's Gulf, in all probability at Port Willunga (Bednall). A second one has been obtained by Mr. E. H. Matthews at Sultana Bay.

14. Ischnochiton Tateanus, n.sp. Pl. XII, Fig. 3.

Shell oval, elevated, obtusely carinated, side slopes slightly convex; colour generally of a sordid grey, minutely mottled with brown or green, sometimes spotted with brown; in occasional specimens the second, third, and sixth valves are black. Interior whitish, tinged with purple green, yellow, or brown in different examples. Central valves finely decussated throughout, not excepting the summits, with very fine, even pustulose, striations, becoming a little coarser and more defined on the side slopes towards the margin; lateral areas somewhat raised, and having about five to seven somewhat indistinct, roughened riblets, the riblet on the posterior edge being double the width of the others, and cut up into transverse, backwardly diverging, short riblets or oblong pustules by concentric grooves, which strongly serrate the posterior edge of the valve. In some specimens the growth-lines are strongly marked. Anterior valve with numerous thread-like pustulose striæ, posterior edge serrated similarly to the central valves. The tail valve having the mucro central, and the posterior sharply defined from the central area. The former ornamented with riblets radiating as in the anterior valve; the central area being sculptured like the immediately preceding valve, the slope from the umbo is concave. Sinus very wide and shallow. Anterior valve 9 or 10, central 1, posterior 8 slits. Girdle narrow, composed of scales deeply grooved on the outer edge, very closely and irregularly set together, gradually diminishing in size towards the outer edge. Length 21, breadth 12 mm.



Ischnochiton Tateanus, n.sp.

Hab.—Dredged only in Sultana Bay (E. H. Matthews).

The chief characteristic of this species is the serrated posterior edges of the valves, and it answers very closely in several particulars to Carpenter's *Ischnochiton serratus* (Pilsbry, Man. Conch., ser. I, vol. xiv, p. 122, and xv, p. 78). Mr. Matthews tells me that the coloration of this species when living affects that of the object to which it may be attached. It is a beautifully sculptured species, but inconspicuous as regards colour. I have named it after Professor Ralph Tate in acknowledgment of my indebtedness to him for the loan of literature which was indispensable to me for the identification of the Chitons of this province.

16. Ischnochiton smaragdinus (Angas).

Lophyrus smaragdinus, Angas: Proc. Zool. Soc. 1867, p. 115, pl. xiii, fig. 28; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 137, vol. xv, pl. xv, fig. 27.

Hab.—Yankalilla, Port Willunga, Noarlunga, Marino, and Largs Bay, the last being near the entrance to the Port Adelaide River. It has been obtained recently by Mr. Matthews near Cape Spencer, Investigator Strait. Its type locality is Port Jackson, New South Wales, and it also occurs in North-West Tasmania.

This beautiful little Chiton was unknown as a South Australian species until the commencement of 1895, when, within the space of three months, it was discovered in several localities comprised in a distance of about thirty miles on the eastern shores of St. Vincent's Gulf. Specimens occur having the pattern of the variety *picturatus*, but more sombre in colour than the Port Jackson examples, with scattered blue spots somewhat as in *I. lentiginosus*. In several Port Jackson specimens examined the slits vary from 10–11 in the anterior, and from 9–12 in the posterior valve.

16. Ischnochiton virgatus (Reeve).

Chiton virgatus, Reeve: Conch. Icon., sp. 192; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 78, pl. viii, figs. 72, 73.

In form this species is rather long and narrow, and the girdle-scales are very small, much finer than in *I. smaragdinus*. The last character at once separates *I. virgatus* from the young *I. lentiginosus* or *I. smaragdinus*, which have relatively large girdle-scales. The type-specimens are recorded to be 5 mm. in length, and 2 in breadth. The average length of those in my collection is 8 to 9 mm., and breadth 4, but I have one example 11·5 mm. long and 4·5 wide.

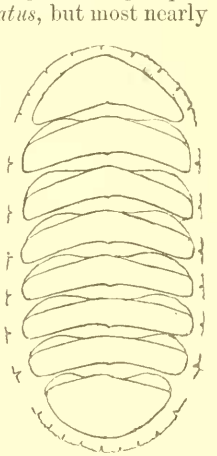
Hab.—Original locality "Port Lincoln," in all probability collected by Harvey. It is plentiful on both sides of Southern Yorke Peninsula; and I have it from Encounter Bay, Port Willunga, and Marino.

A very diminutive but most daintily painted shell, quite distinct from its allies—*I. lentiginosus*, Sby., and *I. smaragdinus*, Angas. Its essential distinguishing characters have been drawn by Dr. Carpenter from the type-specimens in the Cumingian Collection, and these are published in the Manual of Conchology; since as only two specimens

were at Dr. Carpenter's command, and those exceedingly small, I may be permitted to write more fully in regard to the coloration, having numerous examples to work from. The ground tint is grey, speckled with minute sky-blue, or emerald-green spots, sometimes intermingled with angular blotches of white, the spots and blotches often surrounded by a setting of golden brown, giving the surface a beautiful opalescent hue. On the summits of the valves the coloration is distinct and decided: in the majority of specimens the anterior valve is painted with a white blotch, the second, third, and fourth with black blotches, the fifth and sixth with broad white blotches, that on the sixth always the larger, in fact the largest of all of them, giving place on the seventh to a narrow white line, while on the posterior valve the white blotch increases in size again, and forks from the umbo into two divergent white streaks to the margin. The only variation from this style of painting is when the black blotches of the second, third, and fourth valves give place to white, in which case there is an irregular line of white on the summit from one end of the shell to the other. The girdle is white, painted at varying distances with narrow black stripes. *I. virgatus* should not be confounded with *I. lentiginosus*, which differs from it both in shape and markings and in the nature of the girdle-scales.

17. Ischnochiton Thomasi, n.sp. Pl. XII, Figs. 4 and 5.

This name is proposed for an *Ischnochiton* belonging to the group of *I. smaragdinus*, *I. lentiginosus*, *I. Mayi*, and *I. virgatus*, but most nearly allied to the first of these. The general contour is that of *I. smaragdinus*, or somewhat narrower; and the tail valve differs in having the slope behind the mucro notably concave, while in *I. smaragdinus* it is nearly straight. The colour-pattern is unlike any of the varieties of Angas' species, being closely mottled in rather chequered design with white, blue, and light-orange, mingled in varying proportions on different specimens; and there are usually olive clouds on each side of the ridge, accompanied by whitish streaks or spots, and on the tail valve these marks often diverge backward. Along each sutural margin there are two to four dark dots on each side. The general tone is a light greenish-yellow. Girdle light, tessellated with dark bars opposite the sutures, the scales smooth, as in *I. smaragdinus*. Valve i with 10, ii to vii with 1–1, viii with 9 slits. Length 10·5–14, breadth 5–7·5 mm.



Ischnochiton Thomasi, n.sp.

Hab.—Marino, St. Vincent's Gulf, in pools at high-water mark, on smooth pebbles; Cape Spencer, Investigator Strait, under similar conditions, within the influence of the surf (Matthews). It is named in honour of Mr. H. Thomas, who has executed excellent drawings of this and other South Australian Chitons.

Other specimens referable to this species are found under largish blocks of stone, near low-water mark, at Hardwicke Bay, Spencer Gulf. They are somewhat broader than the type. The colours are the same, except that they are paler throughout, with the whitish tints predominating more. The slits in one of these specimens stand: Anterior valve 8, intermediate valves 1–1, posterior valve 7.

I. Thomasi is undoubtedly very near to *I. smaragdinus*, but it seems proper to signalize by a new name the real differences between the two forms. It has much coarser girdle-scales than *I. virgatus*, Reeve.

18. Ischnochiton (Ischnoradsia) Novæ-Hollandiæ (Reeve).

Chiton Novæ-Hollandiæ (Gray MS.), Reeve: Conch. Icon., sp. 142; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 145, pl. xix, figs. 67–9.

Chiton (Lophyrus) Australis, Tenison-Woods: Proc. Roy. Soc. Tasmania, 1877, p. 46 (*non* Sby.).

This Chiton has only been recognized as a denizen of South Australian waters during the last two years, although it had been obtained at the Bluff, Encounter Bay, by two or three collectors some time previously. So far as I know it has not been found at any other station in this province. The Manual of Conchology gives Adelaide, South Australia, but this is an error, for the coast-line in the immediate neighbourhood of Adelaide is a long stretch of sandy beach, and quite unsuited to the habits of the species under notice. *I. Novæ-Hollandiæ* is apparently a common species in Tasmania, where it has been confounded with *I. Australis* (the New South Wales form) and distributed by collectors as such.

19. Callistochiton antiquus (Reeve).

Chiton antiquus, Reeve: Conch. Icon., sp. 169; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 274, pl. lix, figs. 29–35.

There can be no mistaking this beautifully sculptured Chiton, with its malleated upper surface, acutely ribbed side slopes, prominently costated end valves, and doubly costated lateral areas, all the costations being sharply cut into well-defined rounded nodules, small at their commencement and gradually increasing in size towards the margin. "Australia" is the habitat given by Reeve for the type-specimen, which in all probability was obtained at Port Jackson. It was not known as a South Australian species to Angas when listing our shells in 1864; but some three years later it was collected by myself at Marino, on the east side of St. Vincent's Gulf, and subsequently at Port Willunga. Mr. Matthews has lately collected it on Yorke Peninsula. It also occurs at Port Molle, Queensland (Coppinger). My largest New South Wales specimen measures 18 × 10 mm., in accordance with the dimensions given in the Manual of Conchology; but I have South Australian examples 22 mm. long. It must be admitted, however, that they are not so presentable as those from the eastern colony.

20. Chiton tricostalis, Pilsbry.

Chiton (*canalieulatus*, var.?) *tricostalis*, Pilsbry: Nautilus, vol. viii (1894), p. 54.

This is a handsomely sculptured shell, though somewhat sombre in hue. For many years I referred it to *C. muricatus*, Adams [i.e. *C. limans*, Sykes]; and under that name sent it to Mr. Pilsbry, who, however, found it to be a new species. Length of type 17, breadth 11 mm. I have since obtained examples 30 mm. long by 13 broad.

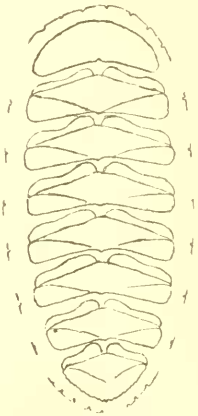
Hab.—Sultana Bay and Troubridge Shoal, at very low tides, under blocks of limestone; also dredged in St. Vincent's Gulf by Dr. Verco. Mr. E. H. Matthews has a seven-valved specimen of the shell in his collection.

21. Chiton calliozona, Pilsbry. Pl. XII, Fig. 6.

Chiton [*aereus*, var.] *calliozona*, Pilsbry: Nautilus, vol. viii (1894), p. 55.

Of the true Chitons this is our largest species, and, moreover, exceedingly handsome. The description given by Mr. Pilsbry is exhaustive; but he appears to have had from me for the purpose but an ordinary-sized specimen—17 × 9 mm. One now before me is quite 45 × 23 mm.; and Mr. E. H. Matthews, who should be credited with the discovery of this fine species, is in possession of shells 50 × 25 mm. He has lately obtained specimens beautifully blotched in some of the valves with chocolate brown.

Hab. — Sultana Bay, at low-water, under blocks of limestone; also dredged in the same locality.



Chiton calliozona, Pilsbry.

22. Chiton jugosus, Gould.

Chiton jugosus, Gould: Proc. Boston Soc. Nat. Hist., ii (1846), p. 142.

Chiton concentricus, Reeve: Conch. Icon. (1847), sp. 95.

Two or three specimens of this Chiton were in the local collections credited to South Australia, but they could not be satisfactorily accounted for. However, during the Easter vacation 1896 several examples were obtained by Dr. W. G. Torr, at Port Willunga.

23. Chiton Coxi, Pilsbry.

Chiton Coxi, Pilsbry: Proc. Acad. Nat. Sci. Philadelphia, 1894, p. 85.

A specimen of this shell obtained by me many years ago from Kangaroo Island, remained in my collection as *C. concentricus*,

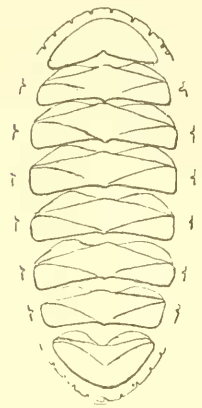
Reeve, and on this authority I believe that species is included in Mr. Adcock's list. A closer examination of specimens recently secured at Sultana Bay proves that they are conspecific with *C. Coxi*, from Port Jackson.

Hab.—Kangaroo Island and Southern Yorke Peninsula (South (Australia); Port Jackson (New South Wales).

It is a prettily-marked species, of a bronze-green colour throughout, and is allied to the preceding.

24. Chiton exoptandus, n.sp. Pl. XII, Fig. 7.

Oblong, strongly elevated with acute dorsal keel and straight side slopes. Cream or brownish-white, heavily blotched on some valves with reddish-brown, sparsely maculated with dots along the ridge, and more or less mottled with the same colour or with pinkish-brown on the other valves, the markings tending to form arcuate longitudinal streaks on the lateral areas and end valves. Girdle rose-purple or reddish-brown, with whitish narrower bars opposite the sutures. A whitish wedge or triangle spreads backward from the mucro on the tail valve. Median valves acutely beaked (when not eroded), the beaks but slightly projecting on the straight or concave posterior margins of valves, which at the sides are regularly and closely serrate. Central areas with a smooth wedge-shaped band along the narrowly rounded ridge (wider and triangular in valve ii); the pleura with about fourteen to eighteen strong, narrow, rounded, longitudinal ribs, about as wide as their intervals; six or eight inner grooves on each side, shorter, not extending to the anterior edge of valves (short grooves on valve ii more numerous); the grooves becoming smaller towards umbones. Lateral areas well raised, with some arcuate, coarse, irregular wrinkles in the direction of growth-lines, bipartite by a median radial sulcus, more or less interrupted into a series of triangular or long pits, whilst in some specimens the areas are trisulcate on some or all valves. Valve i, short, erect, the anterior slope straight and shorter than the sutural margins; apex free and erect; sutural margin emarginate; sculptured with eighteen to twenty radial, pitted grooves, the riblets more or less crenulated. Valve viii, small, with post-central decurved mucro, the posterior slope concave, sculptured with radial grooves and riblets. Interior pink, or purplish where marked outside with brown; sinus extremely narrow (1 mm. wide). Valve i with eight slits; ii to vii, 1–1; viii, ten slits. Girdle clothed with very convex, smooth, and polished scales, measuring slightly over ·5 mm. in width. Length 27–28, breadth 14–15 mm.; divergence 97 degrees.



Chiton exoptandus, n.sp.

Hab.—Dredged generally in St. Vincent's Gulf. Also taken under blocks of limestone, Sultana Bay.

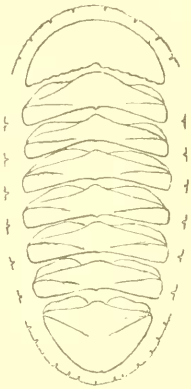
Most nearly allied to *C. Bednalli*, but the sulci of the pleura are more numerous, and many more of them are short, not attaining the anterior border of valve toward the beaks. The sulci of the pleura are continued and curved inward upon the slope of the diagonal line. The outer slope of each individual rib of the pleura is more abrupt than the inner, giving a somewhat imbricate effect. *Chiton Coxi* differs from this species in having fewer sulci on the pleura, unsculptured lateral areas, and non-serrate sutures.

25. Chiton Bednalli, Pilsbry. Pl. XII, Fig. 8.

Chiton Bednalli, Pilsbry, Nautilus, ix (1895), p. 90.

Hab. — Sultana Bay, Yorke Peninsula, one specimen.

This form is very closely allied to *C. exoptandus*. The latter differs, however, conspicuously in coloration.



Chiton Bednalli, Pils.

26. Lorica volvox (Reeve).

Chiton volvox, Reeve, Conch. Icon., sp. 31; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 237, pl. lii, figs. 14–21.

Chiton cimolius, Reeve, Conch. Icon., sp. 141.

This well-known New South Wales species occurs in South Australian waters at three localities in St. Vincent's Gulf, viz.: Port Willunga, Marino, and Sultana Bay, where it is obtained at low tides under blocks of stone.

It is not a scarce shell, and it is therefore curious that it is omitted from Mr. Angas' List; he, however, mentions it as occurring at Port Lincoln in a list of New South Wales shells published in the Proc. Zool. Soc.

27. Loricella Angasi (Ad. & Angas).

Lorica Angasi, H. Adams & Angas: Proc. Zool. Soc. 1864, p. 193; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 238, pl. li, figs. 9–13; Proc. Acad. Nat Sci. Philad. 1894, p. 87.

Hab.—Sultana Bay (Matthews); Rapid Bay (Angas); Holdfast Bay (Bednall); New South Wales (Cox, Brazier).

This form is by no means easily obtained, and for the reason, I believe, that it is located in deeper water I was fortunate on one occasion in getting a very fine specimen, which was on a large frond of fucus, thrown up on the beach after a heavy gale. The differences between this and the preceding species have been noted by Dr. Carpenter, and reproduced in the Manual of Conchology. The peculiar features of *L. Angasi* have subsequently been indicated in Pilsbry's paper on the Port Jackson Chitons.

28. Plaxiphora petholata (Sby.).

Chiton petholatus, Sby.: Mag. Nat. Hist., n.s., vol. iv (1840), p. 289; Conch. Illust., figs. 64, 65.
Plaxiphora petholata, Pilsbry: Man. Conch., ser. I, vol. xiv, p. 323, pl. lxviii, figs. 62–7.

This is the commonest Chiton of the rocky portions of the South Australian coast-line, and it may be taken in numbers at nearly high-water mark between the crevices of the rocks just as the incoming tide reaches them. *P. petholata* attains to a large size, specimens frequently measuring 95 mm. in length, by 55 in width.

29. Plaxiphora conspersa (Ad. & Ang.).

Chætopleura conspersa, Adams & Angas: Proc. Zool. Soc. 1864, p. 193.
Plaxiphora petholata var. *conspersa*, Pilsbry: Man. Conch., ser. I, vol. xiv, p. 324.

Although not a common species, many specimens have now been collected by me when in company with Mr. E. H. Matthews. They are quite distinct from *P. petholata* in any stage of growth, and, moreover, have a different habitat, for whereas *P. petholata* is only taken on rocky coasts on which the surf beats heavily, *P. conspersa* occurs in company with the Ischnochitons under blocks of stone in comparatively smooth water. The principal superficial differences appear to be that *P. conspersa* is more elevated, and the lateral areas, instead of having a narrow, finely corrugated, diagonal riblet, separating them from the pleural tract, are defined by two coarsely nodulous riblets, one on each side of the area, the intervening space having similar sculpturing to that on the body of the shell. Length (largest specimen) 30, breadth 18 mm.

Hab.—"Under rocks, Port Lincoln. A beautiful and rare species" (Angas); North Arm, Port Adelaide, on *Pinna* (Bednall); Sultana Bay, Yorke Peninsula (Matthews and Bednall). In none of these localities does *P. petholata* occur.

Under the heading Teratology, in the Introduction to vol. xiv of the Manual, p. xiii, Mr. Pilsbry writes:—"The occurrence of six- and seven-valved Chitons has been noted as early as the time of Linnæus. It is likely that the *six-valved were artificial fabrications*, although a certain number may perhaps be traced to incorrect drawings." Mr. Matthews is in possession of a veritable *six-valved* specimen of *P. conspersa*!

30. Plaxiphora glauca (Quoy & Gaim.).

Chiton glaucus, Quoy & Gaim.: Voy. Astrolabe, Zool. iii, p. 376, pl. lxxiv, figs. 7–11.
Plaxiphora glauca, Pilsbry: Man. Conch., ser. I, vol. xiv, p. 325, pl. lxviii, figs. 68–72.

It has been my good fortune at the last moment to become possessed of a specimen, although only a small one, of this species. It was

obtained at a part of the coast-line of Southern Yorke Peninsula that is very seldom visited. I ascertained that, although living in the same neighbourhood as *P. petholata*, it is easily distinguished by its bright green girdle and the different nature of the bristle, and also that it attains a larger size. When dried the girdles of both species assume the same appearance; but there is no difficulty in separating the species, for the valves of *P. glauca* are not corrugated as are those of *P. petholata*. I do not think there is any doubt that Mr. Pilsbry is right in his surmise that this "is probably the form Angas collected at Guichen Bay, South Australia, and listed as *P. ciliata*."

31. Acanthochites asbestoides (Smith).

Chiton (*Acanthochiton*) *asbestoides* (Cpr. MS.), Smith: Zool. Coll. H.M.S. "Alert," p. 83, pl. vi, fig. G; Pilsbry, Man. Conch., ser. 1, vol. xv, p. 17, pl. ii, fig. 55.

Acanthochites asbestoides, Cpr.: Pilsbry, Proc. Acad. Nat. Sci. Philad. 1894, p. 79, pl. iii, figs. 16–20.

The description of the species is fully given by Mr. E. A. Smith, and the salient features of the shell have further been recapitulated by Mr. Pilsbry. One specimen in my collection, were it not curled, would measure 20 mm. in length.

Hab.—Southern Yorke Peninsula (common); Rapid Bay, east side of St. Vincent's Gulf; Port Molle (Queensland). I have also specimens collected in Hobson's Bay (Victoria), which should confirm the locality of the type-specimen in the British Museum.

32. Acanthochites Bednalli, Pilsbry.

Acanthochites Bednalli, Pilsbry: Proc. Acad. Nat. Sci. Philad. 1894, p. 81, pl. ii, figs. 7–11.

To the very full description of the above shell, Mr. Pilsbry adds the following:—"The species is closely allied to *A. granostriatus*, but the valves are more solid; *the dorsal areas are much more deeply striated longitudinally*; that of valve viii is largely broken into granules. The sutural laminæ in *A. Bednalli* are greenish; the pustules of the side areas are somewhat larger and rather less regularly arranged in longitudinal series. *A. Bednalli* differs from *A. Coxi* in having much more conspicuous and silky sutural tufts, in the colour of the interior and sutural laminæ, in the flat pustules, and in lacking the curved diagonal rib, which in *A. Coxi* extends from the apex of each median valve to its lateral slits." Length 13, breadth 6·5 mm.

Hab.—Occurs plentifully in company with *A. asbestoides* at Sultana Bay, Yorke Peninsula, under very small stones, near high-water mark. I do not yet know it from any other locality.

33. Acanthochites granostriatus, Pilsbry.

Acanthochites granostriatus, Pilsbry: Nautilus, vol. vii (1894), p. 119; Proc. Acad. Nat. Sci. Philad. 1894, p. 81, pl. ii, figs. 1–6, pl. iv, fig. 37.

This species was included amongst a number of Chitons submitted

by me to Mr. Pilsbry, who attached the following note: "Differs from Port Jackson types in colouring somewhat, but is the same thing in sculpture practically."

Hab.—Two examples were obtained in company with *A. asbestoides* and *A. Bednalli*, Pils., at Sultana Bay, Yorke Peninsula. Since obtained plentifully at Hardwicke Bay, Spencer Gulf. The type-specimens were collected at Port Jackson and Port Hacking, New South Wales, by Dr. J. C. Cox.

34. Acanthochites speciosus (H. Ad.).

Cryptoplax (*Notoplax*) *speciosus*, H. Adams: Proc. Zool. Soc. 1861, p. 385.

Acanthochites speciosus, H. Ad.: Pilsbry, Man. Conch., ser. I, vol. xv, p. 32, pl. i, figs. 23–6.

Acanthochites (*Notoplax*) *speciosus*, H. Ad.: Pilsbry, Proc. Acad. Nat. Sci. Philad. 1894, p. 83, pl. iv, figs. 31–3.

This species is scarce in collections, because seldom taken whilst shore gathering.

Hab.—St. Vincent's Gulf, fine specimens dredged alive by Dr. J. C. Verco, attached to sponges, etc.; Southern Yorke Peninsula, amongst rocks; also Flinders Island, Bass Straits; Tasmania.

35. Acanthochites (Notoplax) Matthewsi, Bedn. & Pilsbry.

Acanthochites Matthewsi, Bednall & Pilsbry: Nautilus, vol. vii (1894), p. 120; (*Notoplax*?) Pilsbry, Proc. Acad. Nat. Sci. Philad. 1894, p. 83, pl. iv, figs. 27–30.

A very beautiful and unique Chiton, sent me some four or five years ago by Mr. Matthews, who took it during an extremely low tide in Sultana Bay, Yorke Peninsula. I sent it to Mr. Pilsbry, who pronounced it to be new, with sculpture "extremely peculiar, and different from that of any previously known member of the family Acanthochitidæ." Length 26, breadth 8 mm. (a dried specimen).

36. Acanthochites (Loboplax) variabilis (Ad. & Angas).

Hanleya variabilis, Ad. & Ang.: Proc. Zool. Soc. 1864, p. 194; Pilsbry, Man. Conch., ser. I, vol. xv, p. 101.

Acanthochites (*Notoplax*?) *variabilis*, Pilsbry: Proc. Acad. Nat. Sci. Philad. 1894, p. 84.

A small oblong shell, the whole surface of which is ornamented with small pustules. Mr. Pilsbry, in 1893, placed it amongst "Insufficiently described Chitons" (Appendix II, vol. xv, of the "Manual of Conchology"); but in the following year, in his "Review of Australian Acanthochitidæ" (Proc. Acad. Nat. Sci. Philadelphia), included it as a probable *Notoplax*. I collected one specimen at Rapid Bay, and a second at Kangaroo Island. Visiting Mr. E. H. Matthews on Yorke Peninsula, I took them with me, and on looking through his material found several others, whilst our first excursion resulted in the capture of many more specimens. At my request, Mr. Matthews has

since made a careful microscopic examination of the species in order to ascertain its true generic position, and the following are his notes:—"Anterior valve has five broad ribs, and the insertion plate is one-third as long as the front slope, carrying five deep slits; central valves 1–1; posterior insertion plates short, with five oblique slits. Sinus wide, square, and very porous. Girdle narrow, corneous, densely covered with minute hyaline spicules, fringed with longer spicules on the edge. Sutural tufts of long horn-coloured spiculæ at valve sutures, seven on each side; four tufts on anterior valve alternately with ribs. There are two colour varieties of this species—one being creamy white, having the side slopes mottled with olive green, and a brown streak along the ridge from valves 1–7; the other variety is dark brown or black with whitish markings. Distinct from *Hanleya* by reason of slits and insertion plates, and from *Angasia* by the presence of slits in insertion plates of posterior valve, and girdle carrying minute spicules, not scales." Length 15, breadth 8 mm.

Hab.—(Type) Yorke Peninsula (Angas); Southern Yorke Peninsula (E. H. Matthews); Rapid Bay, Kangaroo Island (Bednall).

37. Cryptoplax striatus (Lamk.), var. Gunnii.

Chitonellus Gunnii, Reeve: Conch. Icon., sp. 5.
Cryptoplax striatus var. *Gunnii*, Pilsbry: Man. Conch., ser. I, vol. xv, p. 54, pl. viii, fig. 14.

This variety of Lamarck's *Chiton striatus* is exceedingly plentiful at all suitable localities on the South Australian coast-line, and attains a very large size. It also occurs in Tasmania.

SPECIES WHOSE OCCURRENCE IS DOUBTFUL.

38. Ischnochiton Adelaidensis (Reeve).

Chiton Adelaidensis, Reeve: Conch. Icon., sp. 123; Smith, Zoology H.M.S. "Alert," p. 79.
Ischnochiton Adelaidensis, Reeve: Pilsbry, Man. Conch., ser. I, vol. xiv, p. 136, pl. xxiv, figs. 7, 8.

Mr. W. H. Harvey, in the early days of the colonization of South Australia (1854–6), collected many natural-history specimens, which he transmitted to England, and presumably amongst them the present species, Reeve describing it three or four years later as from Port Adelaide. The opinion of Messrs. E. A. Smith and H. A. Pilsbry, however, is that, as with many other specimens in the Cumingian Collection, the labels had become mixed. The discovery in the early part of 1895 of a closely allied shell at several stations on the east side of St. Vincent's Gulf, induced me to communicate with Mr. Smith, and to suggest that the specimens, which I could not satisfactorily separate from *I. smaragdinus*, Angas, might possibly be *I. Adelaidensis*, and in that event the two species were probably identical. Mr. Smith identified my specimens, however, as *I. smaragdinus*; consequently we still need evidence that *I. Adelaidensis* is a denizen of South Australian waters.

39. Chiton limans, Sykes.

[=*muricatus*, Ad. *non*. Tilesius. For synonymy see ante, p. 93.]

Recorded by Mr. Angas, under the name of *Lophyrus muricatus*, as having been collected "under stones at low-water, Port Lincoln"; but it does not occur in South Australian collections as a local species. Can Mr. Angas have identified the shell lately described as *C. tricostalis* by Mr. Pilsbry as *C. muricatus*, Adams?

40. Chiton tulipa, Quoy & Gaim.

Chiton tulipa, Quoy & Gaim.: Voy. Astrolabe, Zool. iii (1834), p. 389, figs. 35, 36; Pilsbry, Man. Conch., ser. I, vol. xiv, p. 185, pl. xxxi, figs. 43–9.
Lophyrus tulipa, Quoy: Angas, Proc. Zool. Soc. 1865, p. 186.

Hab.—"Under stones, low-water, Port Lincoln" (Angas). This South African species is not known to have been obtained subsequently, and Angas' identification may be regarded as probably incorrect.

41. Acanthochites Zelandicus (Quoy & Gaim.).

Chiton Zelandicus, Quoy & Gaim.: Voy. Astrolabe, iii, p. 400, t. lxxiii, figs. 5–8; Reeve, Conch. Icon., sp. 58.
Acanthochætes Hookeri, Gray: Dieffenbach's "Travels in New Zealand," vol. ii, p. 262.
Acanthochites Zealandicus, Hutton: Manual N.Z. Moll., p. 117; Pilsbry, Man. Conch., ser. I, vol. xv, p. 16, pl. xiv, figs. 9, 10.

It is exceedingly doubtful whether this species is an inhabitant of South Australian waters.

42. Acanthochites scutiger (Ad. & Reeve).

Chiton scutiger, Ad. & Reeve: Conch. Icon., sp. 178.
Acanthochites scutiger, Pilsbry: Man. Conch., ser. I, vol. xv, p. 20, pl. ii, figs. 51, 52.

I do not know this shell, and have not yet had an opportunity of visiting Port Lincoln, the locality from which it is recorded by Mr. J. F. Angas. Its occurrence in Australian waters is discredited by Pilsbry (Proc. Acad. Nat. Sci. Philad. 1894, p. 76).

43. Cryptoplax Burrowi (Smith).

Chitonellus larvæformis, Reeve: Conch. Icon., sp. 3.
Chiton (*Chitonellus*) *Burrowi*, Smith: Zool. Coll. H.M.S. "Alert," 1884, p. 85.
Cryptoplax Burrowi, Haddon: "Challenger," Polyplacophora, p. 42, pl. iii, figs. 11 *a–m*.
Cryptoplax Burrowi, Pilsbry: Man. Conch., ser. I, vol. xv, p. 54, pl. ix, figs. 6–10.

Hab.—Port Adelaide (Reeve).
Not known in South Australian collections.